

# Rochester Meeting on OLED Manufacturing

## Trovato Manufacturing, Victor, NY

### 1 October 2013



Summary by Norman Bardsley, January 30, 2014  
for DOE SSL R&D Workshop

# Participants

## Panel Makers

- Moser Baer
- OLEDWorks
- Philips

## Materials

- Alcoa
- Corning
- EMD
- Intrinsic
- PPG
- R-Display & lighting
- UDC

## Equipment

- Kurt J. Lesker
- LC Tech Solutions
- Trovato Mfg

## Luminaires

- Acuity
- WAC Lighting

## Universities

- ASU FDEC
- SUNY CNSE

## Support

- OLED Assoc

# Purpose of Meeting

To gather ideas on how to accelerate developments  
in OLED lighting technology and manufacturing  
by building a framework for collaborative R&D  
and to discuss the need for a pilot production facility

Many views were expressed  
and although no clear consensus emerged  
several action items were formulated

The meeting report can be found at  
[http://apps1.eere.energy.gov/buildings/  
publications/pdfs/ssl/oled-roundtable-report\\_oct2013.pdf](http://apps1.eere.energy.gov/buildings/publications/pdfs/ssl/oled-roundtable-report_oct2013.pdf)

# Three Approaches to Collaboration

- Flexible Display & Electronics Center at ASU
  - \$100M facility with 41 industrial partners
  - Broad infrastructure to support flexible manufacturing
  - Existing OLED deposition equipment
  - Experience in team work and IP management
- SUNY College of Nanoscale Science & Engineering
  - Building available in Canandaigua, NY
  - Synergy with MEMS Center
  - Could be operational in 9 months
- Collaborative experiments at OLEDWorks
  - Production line already available
  - Full suite of test and characterization equipment
  - Fast turn-around for short-term projects

# Action Items

- Formation of OLED Lighting Alliance
  - Keith Cook and Barry Young will formulate a plan
- Alternative funding mechanism
  - DOE will investigate possibility of fast-turnaround procedures
- Specific suggestions for collaboration program
  - JNB to send out questionnaire
- Development of standards for OLED Lighting
  - DOE will compile a list of current activities
- Support for market establishment
  - DOE will investigate possible prize competitions
- Future OLED Forums
  - Adaptation of DOE SSL meetings or new approaches

# Questionnaire on Collaboration Facilities

Responses were received from:

Alcoa	Corning	Kurt Lesker	OLEDWorks	
Pilkington	PPG	R-Display	Trovato	UDC

Suggestions were offered on

- Types of experiment
- Required resources
  - Production line and testing equipment
- Level of effort
  - Multiple 1-2 day tests over 3 month period
  - More concentrated effort over 1-2 weeks
- Cost estimates
  - \$20,000 - \$200,000

# Types of Experiment

- OLED fabrication on new substrates
- Elements of integrated substrates
  - Transparent conductor structures
  - Light extraction layers
- Encapsulation
  - Edge seals
  - Surface barrier films
  - Thin-film encapsulation
- Deposition tools
- Organic materials
  - Emitters
  - Transport materials

# Market Adoption

- Test OLED lighting in government buildings
  - perhaps through Gateway demonstration projects
- Limited standards development
  - too soon for standard sizes or voltage specs
- Engage more panel and luminaire manufacturers
- Programs to raise awareness of OLEDs within industry & to public
- Prizes
- Financial support for production of specific OLED luminaires
  - Building upon past Product Development and SBIR projects
  - Extended rebate programs



# Standards Activities

- **Underwriters Laboratory**
  - UL 1598 Standard for Luminaires
  - UL 8752 Standard for Safety - Organic Light Emitting Diode (OLED) Panels
- **International Electrotechnical Commission**
  - 62868 (Doc 34A/1700) OLED panels for general lighting— Safety requirements
  - Doc 34A/1665: OLED panels for general lighting - Performance requirements
- **Commission Internationale de l'Eclairage:**
  - TC 2-68: Optical Measurement Methods for OLEDs used for Lighting
  - TC 2-75 Photometry of Curved and Flexible OLED and LED Sources
- **Illumination Engineering Society – North America**
  - S404-10 Electrical and photometric measurements for OLEDs
- **China Solid State Lighting Alliance:**
  - CSA 014-2012 OLED lighting terminology and letter symbols,
  - CSA 015-2012 OLED test method

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